VISUAL ANALYSIS

For the

PCH Protective Barrier Design along the Bolsa Chica Ecological Reserve

SR 1 PM 28.7
ORA 12 0K0100

Prepared for
State of California Department of Transportation

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PURPOSE OF STUDY

The purpose of this study is to assess any visual impacts for the installation of a safety barrier and to propose any potential minimization measures to balance any associated adverse visual impacts on Pacific Coast Highway (PCH) near a portion of the Bolsa Chica Ecological Reserve (BCER)

PROJECT DESCRIPTION

The project proposes to consider the installation of two types of barriers for safety considerations. They include a Type 60 Concrete Barrier and a Metal Beam Guardrail. The proposed construction is on northbound PCH on the shore of the BCER.

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ASSESSMENT METHOD

The determination of the visual environment is from the definition of and the analysis of the landscape units and the project view shed by the Landscape Architect. The basis for the visual analysis process is from in the publication "Visual Impact Assessment for Highway Projects", Federal Highway Administration (FHWA), March 1981.

The following six steps outline the process from the "Visual Impact Assessment for Highway Projects".

A. Define the project setting and view shed.
B. Identify the key views for the visual assessment.
C. Analyze existing visual resources and viewer response.
D. Depict the visual appearance of project alternatives.
E. Assess the visual impacts of project alternatives.
F. Propose methods to minimize any adverse visual impacts.

VISUAL ENVIRONMENT OF THE PROJECT

Project Setting

The BCER is one of the most significant coastal wetlands in Orange County along PCH, a State conventional highway. The reserve location is in the southwest corner of Orange County and encompasses a total of 1200 acres of wetlands and 118 acres upland habitat between Seapoint Avenue to the south and Warner Avenue to the north. The project area is in an area under the jurisdiction of the County of Orange in an unincorporated area. The reserve is home to a wide variety of plants, insects, reptiles, mammals, fish, raptors and bird species. The birds use the lagoon to feed and to rest during their migration along the California coast. Some of these birds of the lagoon include some threatened or endangered species. The elevation in the lagoon and the immediate surrounding area is between sea level and 25 feet above sea level. Residents and tourists regularly access the associated trails in this lagoon year round. The BCER is adjacent to the Bolsa Chica State Park, a coastal beach recreational facility. There is a single channel between the lagoon and the Pacific Ocean for tidal water ingress and egress. This portion of PCH is eligible for a Scenic Highway Designation.

Landscape Units

Landscape units are specific areas with similar visual characteristics in the regional project view shed. They contain similar and distinctive visual elements that contribute to the visual character and environment. A landscape unit is a portion of the regional landscape that exhibits a distinct visual character. A landscape unit often corresponds to a place or a district that is familiar to local viewers. There are two landscape units in the project area. They are **Coastal Wetland** and **Coastal Beach Recreational** landscape units.

Coastal Wetland Landscape Unit

The visual characteristics of this unit are the Bolsa Chica Ecological Reserve and the development visible in the background view. The visual elements include lagoon, bluff of the reserve, and commercial and residential development.

Coastal Beach Recreational Landscape Unit

The visual characteristics of this unit are the roadway in the foreground, asphalt parking lot and recreational buildings in the middle ground, and the beach and ocean in the background.

Project View Shed

The project view shed is the scene of the geography, the landscape and the development visible by the motorist, bicyclists and the recreational facility users from and to the project area. The elements and composition of the view shed is the visual environment.

A view shed is a subset of a landscape unit. The composition of the view shed is all the surface areas visible from the viewpoint of an observer. The definition of the limits of a view shed is the visual limits of the views from the project area. The view shed also includes the locations with potential impacts from the visual changes from the project features.

The northbound view from PCH is of the BCER, the surrounding development and the Bolsa Chica State Park. The southbound view from PCH is an opposite view of the same visual elements. The composition of the view shed is the;

- **Foreground**: the scene is in close range to the viewer.
- **Middle ground** is the portion of the view shed half way between the foreground and the background of the view.
- **Background**: is the scenery in the distance view that frames the view.

The project **foreground** view has the roadway, the associated fence barrier along the Bolsa Chica State Park and the elements associated with the State park.

The project **middle ground** has views of the Bolsa Chica Mesa roadway associated with the ponds and islands of the BCER, the sand of the Bolsa Chica State Park and the associated recreational facilities.

The project **background** view is of Pacific Ocean, the San Gabriel Mountains and Santa Ana Mountains.

The following photographs show the typical visual elements of the foreground, middle ground and background view in the project area.

❖ **Foreground (Typical)**

❖ **Middle Ground (Typical)**

❖ **Background (Typical)**

EXISTING VISUAL RESOURCES AND VIEWER RESPONSE

Federal Highway Administration (FHWA) Method of Visual Resource Analysis

Identify Visual Character

Visual character is the descriptive and non-evaluative basis of defined attributes that are neither good nor bad. A description of the change in visual character does not contain good or bad attributes until there is a comparison of the viewer response to the change. If there is public preference for the existing visual character of a regional landscape and resistance to a project, as the project is contrary to the character, then the visual assessment is very important to evaluate the changes to insure project compatibility with the community.

Assessment of Visual Quality

The evaluation of visual quality is by the identification of **vividness**, **intactness** and **unity** present in the view shed. The FHWA states that this method needs correlation with public judgments of visual quality sufficient to predict those judgments. This approach is particularly useful in highway planning because it does not presume that a highway project is necessarily an eyesore. This approach to the evaluation of visual quality can also help identify specific methods for the minimization of each adverse impact that may occur from the project. The definition of the three criteria for the evaluation of visual quality is:

- **Vividness** is the visual power or how memorable the landscape components are as they combine in distinctive visual patterns.

- **Intactness** is the visual integrity of the natural and man-built landscape and the visual freedom from encroaching elements. This may be present in urban and rural landscapes or in natural settings.

- **Unity** is the visual coherence and compositional harmony of the landscape as a whole. Unity frequently attests to careful design of individual manmade components in the landscape.
  These factors are the three criteria of the objective rating system and have equal influence on the visual quality assessment of the landscape. The assessment is the result of the calculation of the following equation:

$$\textbf{Visual Quality} = \frac{\textbf{Vividness + Intactness + Unity}}{\textbf{3}}$$

The evaluation of vividness, intactness and unity are independent. Each criterion has an assigned rating from one to seven.

	HIGH QUALITY (7)	MODERATE QUALITY (4)	LOW QUALITY (1)
Vividness	Highly memorable. Elements combine in striking visual patterns. Presence of distinct focal point(s).	Somewhat memorable. Elements form perceivable pattern(s).	Not vivid. Elements appear random with no perceivable pattern(s).
Intactness	The integrity of visual pattern. The extent to which the landscape is free from visual encroachments.	Man-made development and the natural landscape are disturbed and encroach on the visual setting.	The landscape has encroaching elements that create an eyesore to viewers.
Unity	The degree to which visual elements of the landscape join to form a coherent, harmonious visual pattern.	Some visual relation between man-made and natural setting.	Man-made and natural patterns do not reinforce each other and visually looks chaotic and jumbled.

EXISTING VISUAL RESOURCES

Visual Character

It is necessary to analyze the visual environment of the landscape units. The visual environment is the view from the transportation corridor and the view of the community to the project area. The FHWA method of visual resource analysis is the tool to analyze the visual environment. The method identifies the visual resources and the viewer response.

The visual environment of the project area is primarily the views of the open space, the coastal beach, the wetland lagoon, the salt marsh vegetation, the Bolsa Chica Mesa, the San Gabriel Mountains, the Santa Ana Mountains, and the recreation facilities associated with the Bolsa Chica State Park. There is a large parking lot for the users of the park adjacent to and to the west of PCH. These visual features comprise the character and create a distinctive quality of the view. These elements of the visual environment comprise a landscape unit in the project area. The unit contains the following features.

- The view of the unit to the west of PCH is the Bolsa Chica State Park facility and the open space of the Pacific Ocean.

- The view of the unit to the east of PCH is of the lagoon preserve of the BCER. There are changes in the geography of the unit dependent upon the level of the ocean tide. At low tide, the shore is most visible and predominates. Various sand bars appear. At high tide, the view of the water of the lagoon predominates.

The overall visual character of the landscape unit is of a natural coastal area. The area has some visual intrusions. They are the pavement of the roadway and various elements associated with the recreational facilities. The design of the improvements of the recreational facility has a character that complements the visual environment. Additionally the background has visual intrusions from the residential and development and the associated ornamental landscape.

Existing Visual Quality

The existing visual quality is an assessment of the degree of excellence of a landscape unit. The basis of the degree is the amount of visual continuity of the view. An assessment of the existing visual quality is in the key views identified in this visual study.

Views of high quality have topographic relief, a variety of vegetation, rich colors, impressive scenery, and unique natural or built features. Views of medium quality are minor landforms, some variety in vegetation and color, or moderate scenery. Views of low quality have uninteresting features, little variety in vegetation and color, uninteresting scenery, or common elements. The FHWA guidelines explain that all three criteria, vividness, intactness, and unity, must be high to indicate high quality.

METHODS TO PREDICT VIEWER RESPONSE

Viewer response has two elements, **viewer sensitivity** and **viewer exposure**. The combination of these elements provides a method to predict the public reaction to the visual change from this project.

Viewer sensitivity is both the concern of the viewers for scenic quality and the response of the viewers to the change in the visual resources that comprise the view. Local values and goals may confer visual significance on landscape components and areas that otherwise appear unexceptional in a visual resource analysis. Even when the existing appearance of a project site does not visual inspire, a community may still object to projects that fall short of their visual goals. Analysts can indicate these special resources and community aspirations for visual quality through citizen participation procedures and from local publications and planning documents.

Viewer exposure is an assessment and measurement of the number of viewers with exposure to the resource change, type of viewer activity, duration, speed, and position to the viewer. High viewer exposure heightens the importance of early consideration of design, art, and architecture and their roles in the management of the visual resource effects of a project.

Existing Viewer Groups/Viewer Exposure

We can predict the sensitivity of the various user groups in the project area. Generally, the visual environment includes the transportation users, citizens of the community and citizens in close proximity to PCH that have some exposure to the transportation project improvement. The following identifies the exposure and awareness of the visual impacts of the proposed project improvement on the four viewer groups in this project area, the **traveling public**, **community residents**, **recreational users**, and **commercial area users**.

- **Traveling Public**

Approximately 36,000 vehicles per day travel northbound on this portion of PCH. The combined northbound and southbound travelers reach a total volume of 75,000 vehicles per day. The majority of travelers are commuters to their jobs from the coastal communities in the Orange County area. Other traveling public users include commercial vehicles, tourists and recreational facility users.

Daily commuters have an awareness of the views from the roadway as they spend a significant time on the road. Travelers that experience traffic tend to focus on the roadway and their drive. Travelers without traffic tend to travel at normal roadway speeds and focus their attention on long-range views. Vehicle passengers tend to focus on long-range, intermediate and short-range views.

The traveling public also includes bicyclists that use the route to commute or use the route for recreational purposes. There is a heavy bicyclist use. Additionally this user group is particularly sensitive to the visual environment as they generally travel at a slower pace than motor vehicles and are a user group that appreciates visual quality. Since they use the area of the roadway that is closer to the BCER than motor vehicles they have a greater sensitivity.

Local Community/Arterial Streets

The only local roads in direct vicinity to the safety barrier are access roads to the beach and lagoon. The roads names' are Bolsa Chica State Beach and Bolsa Chica Ecological Reserve. The views from these roadways are generally facing east and west towards the safety barrier.

- **Community Residents**

General Residents

The residents and commercial area users with views toward PCH generally have expansive views of the lagoon and beach from their private property or local streets in the community on the cliff.

Adjacent Residents

There are no residents immediately adjacent to the location of the safety barrier installation. The area surrounding the safety barrier is all in the State-owned recreational designated area.

- **Recreational Users**

The Bolsa Chica Ecological Reserve, Bolsa Chica Bay and State Beach run parallel to PCH on the east and west sides of the roadway. There are no major impacts to the beach users as they general focus on the view of the Pacific Ocean. The recreational trail users in the lagoon are able to see the safety barrier from across the lagoon.

- **Commercial Area Users**

  The commercial areas in the proximity of the project are southwest of the safety barrier and are along Warner Avenue. There is limited exposure to the safety barrier from Warner Avenue since the focus of the visual attention is on the services and products associated with the commercial land use and due to the distant between the commercial area and the safety barrier installation.

VIEWER SENSITIVITY/VIEWER AWARNESS

One tool to predict the awareness and the sensitivity for the visual impacts to the community is the general plan of the agency associated with the transportation improvement.

The Resource Element County of Orange General Plan identifies goals, objectives and policies that apply to the visual study.

Goal: *Retain the character and natural beauty of the environment through the preservation, conservation and maintenance of open space.*

- ***Objective***

  To designate open space areas that preserve, conserve, maintain, and enhance the significant natural resources and physical features of unincorporated Orange County.

- ***Policies***

  To guide and regulate development of the unincorporated areas of the County to ensure that the character and natural beauty of Orange County is retained.

The resource element also includes:

The County shoreline open space buffer merits high-priority status due to it national significance and because of the combined efforts of numerous Federal, State, regional, and local citizen groups to manage and preserve this major conservation and recreation resource for the benefits of the nation's residents.

Reinforcing this high-priority status is the presence of existing and proposed arterial bikeways; scenic highways; and many County, State, and Federal parks, harbors, access ways, viewpoints, preserves, wildlife refuges, wetlands, and/or other beach related public facilities wildlife and the County's Local Coastal Program planning efforts.

- *Early stages of implementation with greatest opportunities for success:*

  BOLSA CHICA: One of the few opportunities to preserve a permanent large open space area along The North Orange Coast, Bolsa Chica merits high priority status due to the combined efforts of the

City of Huntington Beach (Huntington Beach Central Park), the State of California (Bolsa Chica State Beach and Bolsa Chica Ecological Reserve), landowners, and Amigos de Bolsa Chica, Inc. to create a major permanent water-oriented open space area for the benefit of County residents.

VISUAL IMPACT ASSESSMENT

Method of Assessing Project Impacts

The determination of the visual impact is by the assessment of the visual resource, and the prediction and the potential response to the project change.

Visual resource change is the sum of the change in visual character and change in visual quality. The first step in the determination of the visual resource change is to assess the compatibility of the proposed project with the visual character of the existing landscape. The second step is to compare the visual quality of the existing resources with projected visual quality after the project construction.

The viewer response to project changes is the sum of viewer exposure and viewer sensitivity to the project as determined in the preceding section. The determination of viewer response is by the combination of the severity of resource change with the degree people are likely to oppose the change.

Definition of Visual Quality Ratings (1 –Very Low Quality to 7 – Very High Quality)

1 - Very Low - Minor no adverse visual change to the existing visual resource. There is very little or no response to the chance in the visual environment. Mitigation is not a project requirement.

2 - Low - Minor adverse change to the existing visual resource. There is a low viewer response to change in the visual environment. Mitigation may or may not be a project development requirement.

3 - Moderately Low- Moderate adverse visual resource change with low viewer response.

4 - Moderate -Moderate adverse change to the visual resource with moderate viewer response. The achievement of visual impact mitigation within five years with conventional practice is possible.

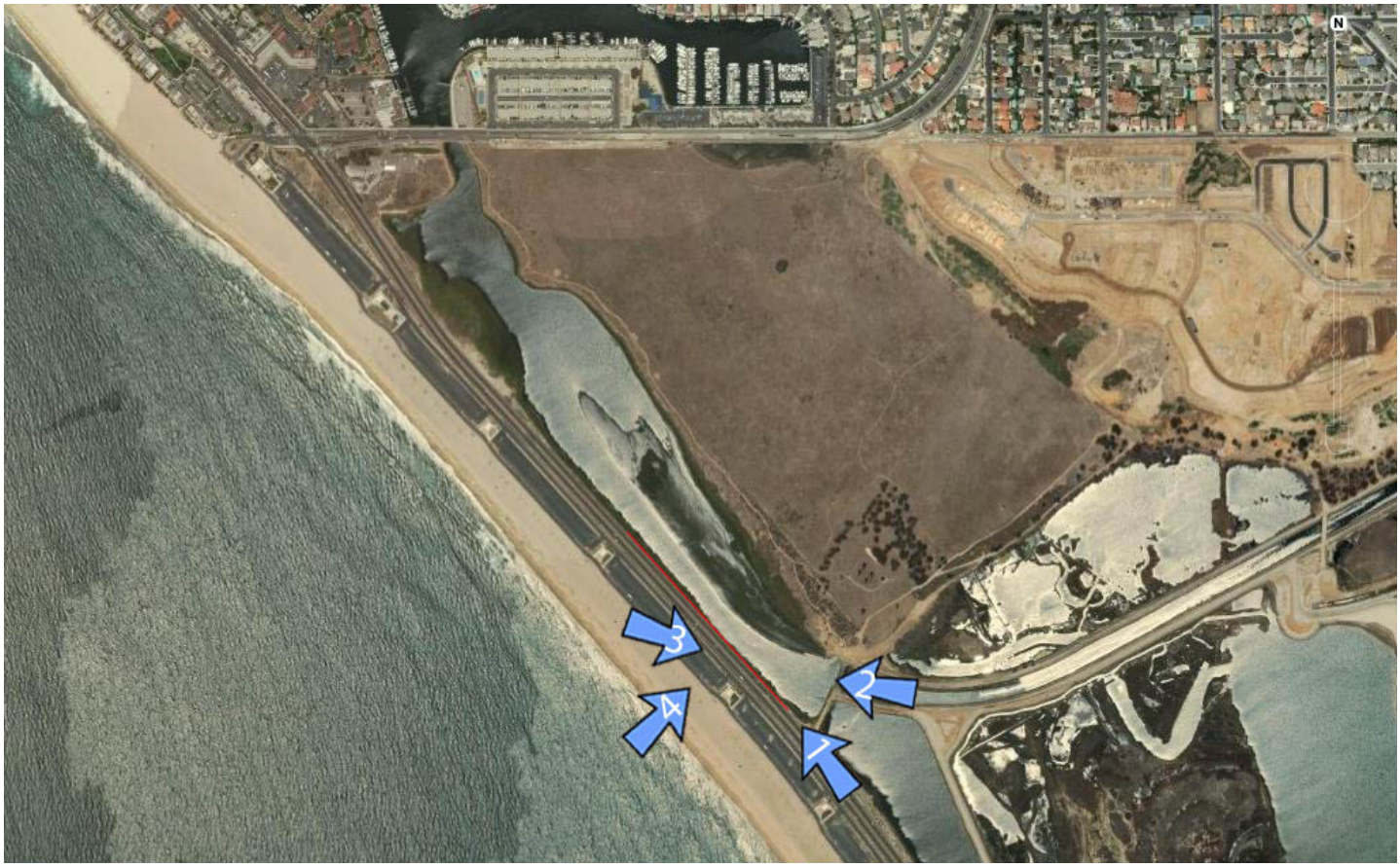
5 - Moderately High -Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response.

6 - High -A high level of negative change to the visual resource or a high level of viewer response to visual change. Architectural design and landscape treatments cannot mitigate the visual impacts of the project. The viewer response level is high. An alternative project design may be necessary to avoid highly adverse impacts.

7 - Very High – There is a very high level of adverse change to the visual resource or a very high level of viewer response to visual change. Architectural design and landscape treatments cannot mitigate the visual impacts of the project. The viewer response level is high. An alternative project design may be necessary to avoid highly adverse impacts.

ANALYSIS OF KEY VIEWS

Key views represent typical, characteristic and clear perceptions of project elements to the primary viewer groups. A select number of key viewpoints need analysis for views to and from the roadway project. These viewpoints clearly display the visual effects of the project and represent the primary viewer groups associated with the project. The following graphic is a vicinity map of the project area that shows the location of the key views of this visual analysis.



KEY VIEW LEGEND

--- Project Location

KEY VIEW #1

Existing Visual Quality and Character

The **foreground** viewers consist of vehicular and bicycle traffic heading north and the temporary safety barrier between the roadway and lagoon. The **middle ground** view is of the lagoon of the BCER. The **background** consists of commercial development and residential units along the cliff.

Proposed Project Elements

The project element is a safety barrier along the shoulder of the northbound lane of PCH. The safety barrier replaces the existing and temporary safety barrier.

- **Alternative 1** includes the addition of a standard concrete safety barrier on the shoulder of the northbound lane of PCH. The safety barrier starts at P.M. 28.7 and continues to the end of the temporary safety barrier.

  Definition: Concrete safety barrier
  Landscape: No formal plant material installation, any plants are volunteer plants.
  Grading: None
  Structural Elements: None
  Signage: Caltrans standard signage
  Orientation: The key view orientation is to the north on PCH.

- **Alternative 2** includes the addition of a standard metal beam guardrail on the shoulder of the northbound lane of PCH. The safety barrier starts at P.M. 28.7 and continues to the end of the temporary safety barrier.

  The purpose of Alternative 2 is to construct a guardrail along the northbound lane of SR-1 to prevent vehicles from straying off the roadway into the lagoon.

  Definition: Metal beam guardrail
  Landscape: No formal plant material installation, any plants are volunteer plants.
  Grading: None
  Structural Elements: None
  Signage: Caltrans standard sign
  Orientation: This view faces north on PCH. The basis for the selection of this view is to show the area of the proposed safety barrier from the road and shoulder of the highway.

The following photographic simulations and rating charts show the change to the visual quality and character resultant from the elements of the project improvement.

Existing View
(Prior to installation of temporary safety barrier)

Existing View -Visual Resource Analysis

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
1	Moderate	Moderate	Moderate	Moderate
	4.0	4.0	4.0	4.0

Proposed Alternative 1

After Construction Visual Resource Analysis
(Concrete Barrier)

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
1	Low	Moderate	Moderate	Moderately Low to Moderate
	2.0	4.0	4.0	3.34

Proposed Alternative 2

After Construction Visual Resource Analysis
(Metal Beam Guardrail)

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
1	**Moderately Low**	**Moderate**	**Moderate**	**Moderately Low to Moderate**
	3.0	**4.0**	**4.0**	**3.67**

Change to Visual Quality and Character

There is a reduction of visual quality of **.66** or .**33** from either a concrete barrier or a metal beam guardrail. in this location. Minimization efforts reduce the moderate impact to a less moderate level of visual disruption. A minimization measure can include the use of a metal beam guardrail rather than a concrete barrier.

Viewer Response

The viewer response to the visual change in this location is moderate to high as the BCER is a unique environment in the region since the majority of land east of PCH contains development. Additionally the community historically has shown a high level of interest to preserve the BCER in as natural condition as possible.

Visual Impact

The use of a metal beam guardrail has less of a visual impact that the concrete barrier as the structure of the metal beam guardrail is not as massive.

KEY VIEW #2

Existing Visual Quality and Character

The **foreground** view consists of ocean water from the lagoon. The **middle ground** consists of vehicular and bicycle traffic and the temporary safety barrier between the roadway and lagoon. The **background** consists of recreational development, parking lot and the sand beach.

Proposed Project Elements

The project element is the safety barrier along the shoulder of the northbound lane of PCH. The safety barrier is to replace the existing, temporary safety barrier.

- **Alternative 1** includes the addition of a standard concrete safety barrier on the shoulder of the northbound lane of PCH. The safety barrier will start at P.M. 28.7 and continues to the end of the temporary safety barrier.

The purpose of Alternative 1 is to construct a safety barrier along the northbound lane of SR-1 to prevent vehicles from straying off the roadway into the lagoon.

Definition: Concrete safety barrier
Landscape: No formal plant material installation, any plants are volunteer plants.
Grading: None
Structure Elements: None
Signage: Caltrans standard sign

- **Alternative 2** includes the addition of a standard guardrail on the shoulder of the northbound lane of PCH. The safety barrier is to start at P.M. 28.7 and continues to the end of the temporary safety barrier.

The purpose of Alternative 2 is to construct a guardrail along the northbound lane of SR-1 to prevent vehicles from straying off the roadway into the lagoon below.

Definition: Metal beam guardrail
Landscape: No formal plant material installation, any plants are volunteer plants.
Grading: None
Structure Elements: None
Signage: Caltrans standard sign
Orientation: This view faces west from a recreational pathway along the lagoon. The basis for the selection of this view is to show the area of the proposed safety barrier from a lookout point, on the eastern side of the lagoon.

The following photographic simulations and rating charts show the change to the visual quality and character resultant from the elements of the project improvement.

Existing View

Existing Visual Quality Analysis

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
2	High	Moderately High	Moderately High	Moderately High to High
	6.0	5.0	5.0	5.33

Proposed Alternative 1

After Construction Visual Resource Analysis
(Concrete Barrier)

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
2	Moderately High	Moderately High	Moderately High	Moderately High
	5.0	5.0	5.0	5.0

Proposed Alternative 2

After Construction Visual Resource Analysis
(Metal Beam Guardrail)

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
2	Moderately High to High	Moderately High	Moderately High	Moderately High to High
	5.5	5.0	5.0	5.17

Change to Visual Quality and Character

There is a reduction of visual quality of **.33** or **.17** from either a concrete barrier or a metal beam guardrail in this location. Minimization efforts reduce the moderate impact to a less moderate level of visual disruption. A minimization measure can include the use of a metal beam guardrail rather than a concrete barrier.

Viewer Response

The viewer response to the visual change in this location is moderate to high as the BCER is a unique environment in the region since the majority of land east of PCH contains development. Additionally the community historically has shown a high level of interest to preserve the BCER in as natural condition as possible.

Visual Impact

The use of a metal beam guardrail has less of a visual impact that the concrete barrier as the structure of the metal beam guardrail is not as massive.

KEY VIEW #3

Existing Visual Quality and Character

The **foreground** view consists of vehicular and bicycle traffic and the temporary safety barrier between the roadway and lagoon. The **middle ground** view is of the lagoon and pedestrian pathways that run parallel to the lagoon. The **background** consists of the San Gabriel and Santa Ana Mountains.

Proposed Project Elements

The project element is a safety barrier along the shoulder of the northbound lane of PCH. The safety barrier replaces the existing, temporary safety barrier.

- **Alternative 1** includes the addition of a standard concrete safety barrier on the shoulder of the northbound lane of PCH. The safety barrier will start at P.M. 28.7 and continues to the end of the temporary safety barrier.

The purpose of Alternative 1 is to construct a safety barrier along the northbound lane of SR-1 to prevent vehicles from straying off the roadway into the lagoon.

Definition: Concrete safety barrier
Landscape: No formal plant material installation, any plants are volunteer plants.
Grading: None
Structure Elements: None
Signage: Caltrans standard sign

- **Alternative 2** includes the addition of a standard guardrail on the shoulder of the northbound lane of PCH. The guardrail is to start at P.M. 28.7 and continues to the end of the temporary safety barrier.

The purpose of Alternative 2 is to construct a guardrail along the northbound lane of SR-1 to prevent vehicles from straying off the roadway into the lagoon.

Definition: Metal beam guardrail
Landscape: No formal plant material installation, any plants are volunteer plants.
Grading: None
Structure Elements: None
Signage: Caltrans standard sign

Orientation

This view faces southeast on PCH. The basis for the selection of this view is to show the area of the proposed safety barrier between the BCER and highway.

The following photographic simulations and rating charts show the change to the visual quality and character resultant from the elements of the project improvement.

Existing View

Existing Visual Quality Analysis

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
3	Moderately Low	Moderate Low	Moderate Low	Moderately Low
	3.0	3.0	3.0	3.0

Proposed Alternative 1

After Construction Visual Resource Analysis
(Concrete Barrier)

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
3	Low	Moderately Low	Moderately Low	Low to Moderately Low
	2.0	3.0	3.0	2.67

Proposed Alternative 2

After Construction - Visual Resource Analysis
(Metal Beam Guardrail)

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
3	Low to Moderately Low	Moderately Low	Moderately Low	Low to Moderately Low
	2.5	3.0	3.0	2.83

Change to Visual Quality and Character

There is a reduction of visual quality of **.33** or **.17** from either a concrete barrier or a metal beam guardrail in this location. Minimization efforts reduce the moderate impact to a less moderate level of visual disruption. A minimization measure can include the use of a metal beam guardrail rather than a concrete barrier.

Viewer Response

The viewer response to the visual change in this location is moderate to high as the BCER is a unique environment in the region since the majority of land east of PCH contains development. Additionally the community historically has shown a high level of interest to preserve the BCER in as natural condition as possible.

Visual Impact

The use of a metal beam guardrail has less of a visual impact that the concrete barrier as the structure of the metal beam guardrail is not as massive.

KEY VIEW #4

Existing Visual Quality and Character

The **foreground** view consists of vehicular and pedestrian traffic in the parking lot and along the beach. The view also consists of the commercial/recreation units along the beach. The **middle ground** view is of the PCH highway, the temporary safety barrier between the roadway and lagoon, and the lagoon itself. The **background** consists of the pedestrian pathways that run parallel to the lagoon and the San Gabriel and Santa Ana Mountains.

Proposed Project Elements

The project element is the safety barrier along the shoulder of the southbound lane of PCH. The safety barrier is to replace the existing, temporary safety barrier.

- **Alternative 1** includes the addition of a standard concrete safety barrier on the shoulder of the northbound lane of PCH. The safety barrier will start at P.M. 28.7 and continues to the end of the temporary safety barrier.

The purpose of Alternative 1 is to construct a safety barrier along the northbound lane of SR-1 to prevent vehicles from straying off the roadway into the lagoon.

Definition: Concrete safety barrier
Landscape: No formal plant material installation, any plants are volunteer plants.
Grading: None
Structure Elements: None
Signage: Caltrans standard sign

- **Alternative 2** includes the addition of a standard metal beam guardrail on the shoulder of the northbound lane of PCH. The safety barrier will start at P.M. 28.7 and continues to the end of the temporary safety barrier.

The purpose of Alternative 2 is to construct a guardrail along the northbound lane of SR-1 to prevent vehicles from straying off the roadway into the lagoon below.

Definition: Metal beam guardrail
Landscape: No formal plant material installation, any plants are volunteer plants.
Grading: None
Structure Elements: None
Signage: Caltrans standard sign

Orientation

This view faces northeast towards PCH, from the beach in the City of Huntington Beach. The basis for the selection of this view is to show the area of the proposed safety barrier between the lagoon and highway.

The following photographic simulations and rating charts show the change to the visual quality and character resultant from the elements of the project improvement.

Existing View

Existing Visual Resource Analysis

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
4	Low	Low	Low	Low
	2.0	2.0	2.0	2.0

Proposed Alternative 1

After Construction - Visual Resource Analysis

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
4	Very Low to Low	Low	Low	Very Low to Low
	1.7	2.0	2.0	1.9

Proposed Alternative 2

After Construction Visual Resource Analysis
(Metal Beam Guardrail)

KEY VIEW	Vividness	Intactness	Unity	Visual Quality
4	**Low**	**Low**	**Low**	**Low**
	2.0	**2.0**	**2.0**	**2.0**

Change to Visual Quality and Character

There is a reduction of visual quality of **.1** or **no measurable change** from either a concrete barrier or a metal beam guardrail in this location. Minimization efforts reduce the moderate impact to a less moderate level of visual disruption. A minimization measure can include the use of a metal beam guardrail rather than a concrete barrier.

Viewer Response

The viewer response to the visual change in this location is moderate to high as the BCER is a unique environment in the region since the majority of land east of PCH contains development. Additionally the community historically has shown a high level of interest to preserve the BCER in as natural condition as possible.

SUMMARY OF VISUAL IMPACTS

The following rating chart is a summary rating chart.

Location		Vividness	Intactness	Unity	Visual Quality
Key View 1	Existing	4.0	4.0	4.0	4.0
	Alternate 1	2.0	4.0	4.0	3.34
	Alternate2	3.0	4.0	4.0	3.67
				Alternate 1 Visual Quality Difference – **0.66** Alternate 2 Visual Quality Difference – **0.33**	
Key View 2	Existing	6.0	5.0	5.0	5.33
	Alternate 1	5.0	5.0	5.0.	5.0
	Alternate2	5.5	5.0	5.0	5.17
				Alternate 1 Visual Quality Difference **– 0.33** Alternate 2 Visual Quality Difference **– 0.16**	
Key View 3	Existing	3.0	3.0	3.0	3.0
	Alternate 1	2.0	3.0	3.0	2.67
	Alternate2	2.5	3.0	3.0	2.83
				Alternate 1 Visual Quality Difference **– 0.33** Alternate 2 Visual Quality Difference **– 0.17**	
Key View 4	Existing	2.0	2.0	2.0	2.0
	Alternate 1	1.7	2.0	2.0	1.9
	Alternate2	2.0	2.0	2.0	2.0
				Alternate 1 Visual Quality Difference **– 0.1** Alternate 2 Visual Quality Difference **– 0**	

VISUAL SUMMARY/MINIMIZATION

Caltrans and the FHWA mandate a quantitative, qualitative and aesthetic approach to minimize the cumulative loss of visual quality to the view shed resultant from an associated transportation project. This provides the basis to generate public support, acceptance and neutrality for a transportation project.

The steep slope of the lagoon that is adjacent to the northbound lanes of PCH is a safety hazard. As a result, the California Department of Transportation (Department) needs install a safety barrier to protect the health and safety of the traveling public.

The visual analysis of the project elements shows a minor degradation of the visual environment along PCH. On other hand, since this area is unique in the region and since historically the viewer response to any development is high, it is very important that the safety barrier needs to complement the visual environment. Moreover, since Route 1 is eligible for scenic highway designation, it is also very important that any improvements by the Department have a neutral effect to the visual environment as well. Additionally it is most important not to contribute to any cumulative degradation of the visual environment.

Consequently, according to the visual analysis, the Department needs to use of a metal beam guardrail rather than a concrete safety barrier, to avoid any change to this unique visual environment. Additionally the metal guardrail should have some treatment to minimize the shiny appearance of a new guardrail installation.

REFERENCES

U.S.D.O.T., Federal Highway Administration, Office of Environmental Policy, Visual Impact Assessment for Highway Projects, U. S. Department of Transportation Washington D. C. March 1981.

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